ENGG100

Introduction to Engineering

S2 Day 2018

Dept of Engineering

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Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff

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Credit points
3

Prerequisites

Corequisites

Co-badged status

Unit description
This unit consists of briefings, workshop sessions, self-study, group work and other activities centred around a set of projects. Students learn about the process of engineering including solving ill-defined problems, constrained design and product development, by working in groups on a set of projects. The unit also gives students an opportunity to develop and practice professional skills such as written and oral communication.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are

available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

LO1. Students will be able to apply structured problem solving and design processes at an introductory level.

LO2. Students will be able to recognise and enumerate the constraints on an engineering project.

LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.

LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.

LO5. Students will demonstrate professional written and oral communication skills.

LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

General Assessment Information

Student Responsibilities

Students are expected to be familiar with University policy and procedures and act in accordance with University policy and procedures.

It is the responsibility of the student to retain a copy of any work submitted. Students must produce these documents upon request. Copies should be retained until the end of the grade appeal period each term.

Each student is expected to perform the required due diligence for their assessment grades; and upon finding any errors, notify a tutor and rectify these as soon as possible.

In order to pass this unit, students must achieve **an overall passing grade of 50%, including satisfactory performance in both the hurdle assessments**.

You must attend and participate in at least 10 of the 12 weekly workshop sessions to pass this unit. Please contact your tutor as soon as possible if you have difficulty attending and participating in any workshop. If there are circumstances that mean you miss a class, you can apply for Special Consideration https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration

All class activities are to be dated and documented in a bound A4 book. Any student who misses 20 mins of a workshop will be deemed absent for that workshop.

Notifications

Formal notification of assessment tasks, grading rubrics and due dates will be posted on iLearn.

Although all reasonable measures are taken to ensure the information is accurate, the University reserves the right to make changes without notice. Each student is responsible for checking iLearn for changes and updates.

Assignments

Assignments (Assessment Tasks 3,4,5,6) will be posted on iLearn at least two weeks before their submission date.

All assignments must be submitted electronically through iLearn (in pdf format). Submissions are expected to be typed in a logical layout and sequence. Markers WILL NOT grade poorly organized or illegible scans or drafts. The workload of this unit includes preparation of final copies and clear diagrams.

Resubmissions will be permitted up to due date.

Late submissions or absence from workshops/laboratories will not be accepted without prior arrangement, usually occurring before the disruption. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption to studies.

Late assignment submissions will incur a 20% reduction in marks per day.

Hurdle Requirements

The *A0. Workshop Participation* and *A6. Final Examination* is a hurdle requirement because this is a reliable assessment of individual, invigilated performance for this unit. An attendance of 70% or more is a condition of passing this unit. Students are required to attend at least 9 out of 13 workshop sessions to pass this unit. A passing grade of 50% or more in the final examination is a condition of passing this unit.

Assessment Tasks

Name	Weighting	Hurdle	Due
A0Participation and engagement	0%	Yes	Weekly
A1. Online diagnostic quiz	2%	No	Week 2
A2. Library research report	8%	No	Week 5
A3. Group Project 1	22%	No	Week 7
A4. Laboratory Report	12%	No	Week 10
A5. Group Project 2	26%	No	Week 13
A6. Final examination	30%	Yes	Exam period

A0Participation and engagement

Due: **Weekly**

Weighting: **0%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Students are expected to actively participate in all workshops. Students must attend and participate in at least 10 of the 12 weekly Workshop sessions to pass this unit. This is a hurdle requirement.

On successful completion you will be able to:

- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

A1. Online diagnostic quiz

Due: **Week 2**
Weighting: **2%**

Quiz on mathematics, unit conversions and other assumed knowledge. This is a diagnostic test for assumed knowledge needed for the MQ Engineering degree. Refer to iLearn for more details on online completion, due date and assessment..

On successful completion you will be able to:

- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

A2. Library research report

Due: **Week 5**
Weighting: **8%**

Students are expected to research and discuss a nominated the engineering project and its societal impact. Students may use this activity to further develop interests in the engineering discipline of their choice.

Refer to iLearn for more details on online submission, due date and assessment.

On successful completion you will be able to:

- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.

- LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.
- LO5. Students will demonstrate professional written and oral communication skills.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

A3. Group Project 1

Due: **Week 7**
Weighting: **22%**

Group Project 1 Assessment marks include: • Weekly group submission • Group attendance and engagement • Final group presentation All marks will be moderated by a peer assessment process.

Refer to iLearn for more details on online submission, due date and assessment.

On successful completion you will be able to:

- LO1. Students will be able to apply structured problem solving and design processes at an introductory level.
- LO2. Students will be able to recognise and enumerate the constraints on an engineering project.
- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

A4. Laboratory Report

Due: **Week 10**
Weighting: **12%**

A professional technical report will be prepared by each student, on an engineering experiment such as mechanical tensile testing. Students will be provided with experimental data collected from a laboratory demonstration; and will use a standard template.

Refer to iLearn for more details on online submission, due date and assessment..

On successful completion you will be able to:

- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.

- LO5. Students will demonstrate professional written and oral communication skills.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

A5. Group Project 2

Due: **Week 13**
Weighting: **26%**

Group Project 2 Assessment marks include: • Weekly group submission • Group attendance • Final group report • Final group presentation All marks will be moderated by a peer assessment process.

Refer to iLearn for more details on online submission, due date and assessment.

On successful completion you will be able to:

- LO1. Students will be able to apply structured problem solving and design processes at an introductory level.
- LO2. Students will be able to recognise and enumerate the constraints on an engineering project.
- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

A6. Final examination

Due: **Exam period**
Weighting: **30%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Final examination, 3 hours duration, will test all learning outcomes.

On successful completion you will be able to:

- LO1. Students will be able to apply structured problem solving and design processes at an introductory level.
- LO2. Students will be able to recognise and enumerate the constraints on an engineering project.
- LO3. Students will be able to follow regulatory standards and policies, including codes of

ethics, health and safety.

- LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.
- LO5. Students will demonstrate professional written and oral communication skills.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

Delivery and Resources

Access information on this unit on iLearn at https://ilearn.mq.edu.au/login/MQ/

Some resources to start with:

Useful books Engineering Your Future: An Australasian Guide; Dowling, Carew, Hadgraft; John Wiley & Sons Australia, Ltd.; 2nd Ed (2013).

To Engineer is Human, Henry Petroski; several publishers and editions starting 1985.

Useful URLs www.engineersaustralia.org.au

Useful videos: Google Scholar This video provides a quick introduction to Google Scholar and how to search it effectively. It also shows how to access it to ensure you link to full-text material which Macquarie University Library already subscribes to. https://www.youtube.com/watch?v=jI5ixQmCXDU&feature=youtu.be How to find a government report This short video provides you with tips and tricks for finding government reports easily using Google https://www.youtube.com/watch?v=2vqS4P_Q2z8 Acknowledging the words and ideas of others This video introduces referencing the ideas and works of others, copyright and creative commons licencing. https://www.youtube.com/watch?v=QXlo98z_yFs

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4*

December 2017 and replaces the Disruption to Studies Policy.)

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy.

The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- LO5. Students will demonstrate professional written and oral communication skills.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- A3. Group Project 1
- A5. Group Project 2

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- LO1. Students will be able to apply structured problem solving and design processes at an introductory level.
- LO2. Students will be able to recognise and enumerate the constraints on an engineering project.
- LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- A3. Group Project 1
- A5. Group Project 2

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcome

- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- A0Participation and engagement
- A3. Group Project 1
- A5. Group Project 2

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- LO1. Students will be able to apply structured problem solving and design processes at an introductory level.
- LO2. Students will be able to recognise and enumerate the constraints on an engineering project.
- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.

- LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.

Assessment tasks

- A1. Online diagnostic quiz
- A3. Group Project 1
- A5. Group Project 2
- A6. Final examination

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- LO2. Students will be able to recognise and enumerate the constraints on an engineering project.
- LO5. Students will demonstrate professional written and oral communication skills.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- A2. Library research report
- A3. Group Project 1
- A4. Laboratory Report
- A5. Group Project 2
- A6. Final examination

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcome

- LO1. Students will be able to apply structured problem solving and design processes at an introductory level.

Assessment tasks

- A2. Library research report
- A3. Group Project 1
- A4. Laboratory Report
- A5. Group Project 2
- A6. Final examination

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- LO5. Students will demonstrate professional written and oral communication skills.

Assessment tasks

- A2. Library research report
- A3. Group Project 1
- A4. Laboratory Report
- A5. Group Project 2
- A6. Final examination

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.
- LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.
- LO6. Students will be able to recognise their own strengths and weaknesses and demonstrate self-directed learning. Students will demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- A1. Online diagnostic quiz
- A3. Group Project 1
- A5. Group Project 2
- A6. Final examination

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- LO3. Students will be able to follow regulatory standards and policies, including codes of ethics, health and safety.
- LO4. Students will be able to identify differences between engineering disciplines and will be aware of the purpose of Engineers Australia.

Assessment tasks

- A3. Group Project 1
- A5. Group Project 2